CLAIMS

1. A communication network, comprising:

a communication medium; and

a plurality of communication nodes, mutually coupled by the communication medium so as to form a ring, over which each of the nodes is configured to transmit traffic to the other nodes in both clockwise and counterclockwise directions around the ring, while at least one of the nodes is configured to receive the traffic in only one of the directions at any given time.

2. A network according to claim 1, wherein the plurality of the nodes comprises a gateway node, and wherein the at least one of the nodes is configured to receive the traffic in the direction in which the at least one of the nodes is reached from the gateway nodes in a minimal number of hops.

3. A network according to claim 2, wherein the gateway node is configured to receive the traffic in both the clockwise and counterclockwise directions.

4. A network according to claim 2, wherein the at least one of the nodes comprises a network access node.

5. A network according to claim 1, wherein the at least one of the nodes comprises multiple nodes, each configured to receive the traffic only in a respective one of the directions, and wherein the respective direction is selected for each of the multiple nodes so as to balance the traffic carried in the clockwise and counterclockwise directions around the ring.

6. A network according to claim 1, wherein the nodes are adapted to maintain information indicative of the

respective directions in which the other nodes are configured to receive the traffic, and to select the directions in which to transmit the traffic to the other nodes responsive to the information.

7. A network according to claim 6, wherein the nodes are adapted to send topology discovery packets around the ring to the other nodes in both the clockwise and the counterclockwise directions, and to extract the information from the packets after the packets have made a complete circuit of the ring.

8. A network according to claim 6, wherein the at least one of the nodes is adapted to reconfigure the direction in which it is to receive the traffic while the network is in operation, and to send the remaining nodes in the network a notification when it reconfigures the direction, so that the remaining nodes update accordingly the information that they maintain.

9. A network according to claim 8, wherein upon receiving the notification, the remaining nodes delay transmitting the traffic to the at least one of the nodes for a predetermined waiting period.

10. A network according to claim 1, wherein the at least one of the nodes is adapted to reconfigure the direction in which it is to receive the traffic while the network is in operation.

11. A communication device, for operation as a node in a ring network over which traffic is transmitted in both clockwise and counterclockwise directions, the device comprising:

a traffic processing block, adapted to prepare outgoing data packets for transmission over the network and to process incoming data packets received from the network; and

a media access control block, interfacing to the traffic processing block and adapted to be coupled to the network so as to transmit the outgoing data packets over the network in both of the clockwise and counterclockwise directions, while passing to the traffic processing block the incoming data packets that it receives in only one of the clockwise and counterclockwise directions.

12. A device according to claim 11, wherein the network is configured to carry the traffic at a predetermined maximum data rate in each of the clockwise and counterclockwise directions, and wherein the media access control block and traffic processing blocks are interfaced to one another at a data rate not substantially greater than the predetermined maximum.

13. A device according to claim 11, wherein the media access control block is configurable to enable selection, while the network is in operation, of the one of the clockwise and counterclockwise directions in which the incoming data packets are to be received and passed to the traffic processing block.

14. A device according to claim 11, wherein the media access control block is adapted to maintain information indicating in which of the directions other nodes in the network are configured to receive the traffic, and to select the directions in which to transmit the outgoing data packets to the other nodes responsive to the information.

15. A method for communication, comprising:

coupling a plurality of communication nodes together in a ring, so as to enable each of the nodes to transmit traffic simultaneously in both clockwise and counterclockwise directions; and

configuring at least one of the nodes to receive the traffic in only one of the directions at any given time.

16. A method according to claim 15, wherein coupling the plurality of the nodes comprises a coupling a gateway node among the nodes in the ring, and wherein configuring the at least one of the nodes comprises configuring the node to receive the traffic in the direction in which the at least one of the nodes is reached from the gateway nodes in a minimal number of hops around the ring.

17. A method according to claim 16, wherein coupling the gateway node comprises configuring the gateway node to receive the traffic in both the clockwise and counterclockwise directions.

18. A method according to claim 15, wherein configuring the at least one of the nodes comprises configuring each of a multiplicity of the nodes in the ring to receive the traffic only in a respective one of the directions, and selecting the respective direction for each of the multiplicity of the nodes so as to balance the traffic carried in the clockwise and counterclockwise directions around the ring.

19. A method according to claim 15, and comprising maintaining information at the nodes indicative of the respective directions in which the other nodes are configured to receive the traffic, and transmitting the traffic to the other nodes responsive to the information.

20. A method according to claim 19, wherein maintaining the information comprises sending topology discovery packets around the ring to the nodes in both the clockwise and the counterclockwise directions in order to gather the information, and extracting the information from the packets after the packets have made a complete circuit of the ring.

21. A method according to claim 19, wherein configuring the at least one of the nodes comprises reconfiguring the direction in which the node is to receive the traffic while the network is in operation, and sending the remaining nodes in the network a notification that the direction has been reconfigured, whereby the information is updated accordingly.

22. A method according to claim 21, wherein transmitting the traffic comprises, upon receiving the notification, delaying transmission of the traffic from the remaining nodes to the at least one of the nodes for a predetermined waiting period.

23. A method according to claim 15, wherein configuring the at least one of the nodes comprises reconfiguring the direction while the network is in operation.

24. A method according to claim 15, wherein coupling the plurality of the communication nodes comprises setting up the network to carry the traffic at a predetermined maximum data rate in each of the clockwise and counterclockwise directions, and wherein configuring the at least one of the nodes comprises configuring the at least one of the nodes to receive the traffic at a data rate not substantially greater than the predetermined maximum.